

WHAT IS CLAIMED IS:

1. A light-emitting semiconductor device, comprising:
at least two terminals;
at least one LED die, and each comprising two electrode contacts;
a driver IC chip comprising a contact and at least one output port;
a substrate attached beneath said LED die and said driver IC chip;

5 and

a refractive encapsulation material for integrally encapsulating and protecting said LED die and said driver IC chip;

10 wherein:

one of said electrode contacts of each LED die is connected to the respective output port of said driver IC chip;

another electrode contact of each LED die is connected to one of said terminals of said light-emitting semiconductor device;

15 said contact of said driver IC chip is connected to another terminal of said light-emitting semiconductor device;

said LED die is lit by applying voltage or current to said terminals of said light-emitting semiconductor device and passing through said driver IC chip; and

20 said light-emitting semiconductor device is attached on an application circuit board by adhering said terminals thereon with surface-mount technology.

25 2. The light-emitting semiconductor device as claimed in claim 1, wherein said driver IC chip is a current-driving IC chip and outputs a current to said LED die.

3. The light-emitting semiconductor device as claimed in claim 2, wherein said driver IC chip outputs a constant current unaffected by deviation of forward voltage of said LED die so as to precisely control

brightness of said LED die.

4. A light-emitting semiconductor device, comprising:
 - at least three terminals;
 - at least one LED die, and each comprising two electrode contacts;
 - 5 a driver IC chip comprising at least two contacts and at least one output port;
 - a substrate attached beneath said LED die and said driver IC chip;
 - and
 - a refractive encapsulation material for integrally encapsulating and
- 10 protecting said LED die and said driver IC chip;

wherein:

one of said electrode contacts of each LED die is connected to the respective output port of said driver IC chip by an electrically conducting means;

15 another electrode contact of each LED die is connected to one of said terminals of said light-emitting semiconductor device;

two contacts of said driver IC chip are respectively connected to another two terminals of said light-emitting semiconductor device, and one of said terminals provides a voltage or current for controlling output of said

20 driver IC chip;

said LED die is lit by applying voltage or current to said terminals of said light-emitting semiconductor device and passing through said driver IC chip; and

25 said light-emitting semiconductor device is attached on an application circuit board by adhering said terminals thereon with surface-mount technology or through-hole technology.

5. The light-emitting semiconductor device as claimed in claim 4, wherein said driver IC chip is a current-driving IC chip and outputs a current

to said LED die.

6. The light-emitting semiconductor device as claimed in claim 5, wherein said driver IC chip outputs a constant current unaffected by deviation of forward voltage of said LED die so as to precisely control
- 5 brightness of said LED die.